a two-dimensional array detector positioned to detect the spatially distributed polarization changes caused by the specimen array.

36. (new) The apparatus as in Claim 35, wherein the light source comprises a quasi-monochromatic light source of moderate bandwidth.

37. (new) The apparatus as in Claim 35, wherein the light source comprises a laser emitting substantially coherent light, and further comprising an optical diffuser mechanically attached to a mechanical actuator, the light emitted from the laser passing through the diffuser, the diffuser being moved with respect to the laser by the actuator, the movement of the diffuser with respect to the laser creating fluctuations in the speckle pattern of light detected by the detector, the fluctuations being adapted to remove speckle effects from the light detected by the detector.

38. (new) The apparatus as in Claim 35, wherein the light source comprises a beam forming system, the beam forming system causing the light emerging from the light source to be collimated.

39. (new) The apparatus as in Claim 35, wherein the light source comprises an optical polarizer.

40. (new) The apparatus as in Claim 35, wherein the light source comprises an optical retarder, the retarder introducing an optical phase shift between two orthogonal components of light passing through the retarder.

41. (new) The apparatus as in Claim 35, wherein the structure comprises an optical prism.

42. (new) The apparatus as in Claim 35, wherein the specimen array comprises a two-dimensional array formed of multiple fields comprising biomolecular substances.

43. (new) The apparatus as in Claim 35, wherein the two-dimensional array detector comprises an optical polarizer.

44. (new) The apparatus as in Claim 35, wherein the two-dimensional array detector comprises a two-dimensional CCD array.

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45. (new) The apparatus as in Claim 35, wherein the two-dimensional array detector comprises a two-dimensional photodiode array.

46. (new) The apparatus as in Claim 35, further comprising a signal processing member connected to the two-dimensional array detector, the signal processing member processing the signal from the two-dimensional array detector to obtain a two-dimensional representation of the optical phase shifts occurring in the specimen array.

47. (new) The apparatus as in Claim 36, wherein the quasi-monochromatic light source of moderate bandwidth is a light-emitting diode (LED).

48. (new) The apparatus as in Claim 36, wherein the quasi-monochromatic light source of moderate bandwidth is a superluminescent diode (SLD).

49. (new) The apparatus as in Claim 36, wherein the quasi-monochromatic light source of moderate bandwidth has an optical bandwidth with a full width half maximum between 5 nm and 60 nm.

50. (new) The apparatus as in Claim 36, wherein the quasi-monochromatic light source of moderate bandwidth comprises an incandescent source and an optical filter, the light emitted from the incandescent source passing through the optical filter, the optical filter limiting the wavelengths of the light transmitted through the optical filter such as to constitute quasi-monochromatic light of moderate bandwidth.

51. (new) The apparatus as in Claim 37, wherein the mechanical actuator is a motor rotating the optical diffuser.

52. (new) The apparatus as in Claim 40, wherein the optical retarder is controllably rotated by a motor.

53. (new) The apparatus as in Claim 40, wherein the optical retarder changes retardance according to an externally introduced physical parameter.

54. (new) The apparatus as in Claim 41, wherein the light beam from the light source is directed to enter the optical prism along an axis perpendicular to one of the sides of the optical prism.

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55. (new) The apparatus as in Claim 41, wherein the light reflected from the surface exits the optical prism along an axis perpendicular to one of the sides of the optical prism.

56. (new) The apparatus as in Claim 42, wherein the biomolecular substances are proteins.

57. (new) The apparatus as in Claim 42, wherein the biomolecular substances are peptides.

58. (new) The apparatus as in Claim 42, wherein the biomolecular substances are polynucleotide sequences.

59. (new) The apparatus as in Claim 43, wherein the optical polarizer is controllably rotated by a motor.

60. (new) A method of imaging, comprising:

passing a polarized light beam into an optical structure for reflection at a surface of the optical structure to provide an evanescent field, a specimen array in the evanescent field causing spatially distributed polarization changes in the cross-section of the light beam;

passing the reflected light beam out of the optical structure;

detecting the spatially distributed polarization changes caused by the specimen array; and

processing the detected spatially distributed polarization changes to provide an image of the specimen array.

61. (new) The method of Claim 60, wherein the specimen array comprises a plurality of discrete specimen spots and the image is provided for each of the discrete specimen spots.

62. (new) The method of Claim 60, further comprising using the spatially distributed polarization changes to determine two-dimensionally distributed presence and/or properties of the specimen array constituents.

63. (new) The method of Claim 62, wherein the specimen array is in a micro-titer plate.

64. (new) The method of Claim 63, further comprising:

resolving the spatially distributed polarization changes for matching positions in the micro-titer plate; and

analyzing the polarization changes to determine desired characteristics in each position.

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65. (new) The method of Claim 60, wherein the specimen array is a series of discrete specimen spots.

66. (new) The method of Claim 65, further comprising analyzing the polarization changes to determine the binding characteristics of each discrete specimen spot.

67. (new) The method of Claim 60, wherein a specimen array having no molecular tagging is placed in the evanescent field.

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